

Challenger Wave



Monthly newsletter of the Challenger Society for Marine Science (CSMS)

NEWS

Eleanor Frajka-Williams receives the 2021 AMS Nicholas P. Fofonoff Award

Congratulations to the National Oceanography Centre's (NOC) Dr. Eleanor Frajka-Williams who has received the prestigious Nicholas P. Fofonoff Award in 2021 presented by the American Meteorological Society (AMS).



The award is given annually to an early-career scientist who has demonstrated outstanding ability and research achievement in the field of physical oceanography. Eleanor has been recognised for her innovative contributions to observing and understanding the physical mechanisms responsible for variability of the Atlantic Meridional Overturning Circulation.

Established in 2007, the award was named in honor of Nicholas P. Fofonoff, a WHOI physical oceanographer renowned for his research on the dynamics of ocean currents. Fofonoff, who served twice as chair of the WHOI Physical Oceanography Department during his career, passed away in 2003.

Eleanor was unable to accept the award in person, but she did record a short video,

vimeo.com/488461751, from onboard RRS Discovery as the ship embarked on an expedition to recover data and to service and deploy moorings in the Atlantic at the end of 2020.

Award win for international sustained observations team

The Oceanography Society (TOS) has named members of the RAPID / MOCHA / WBTS 26° N team as the inaugural recipients of the TOS Ocean Observing Team Award. This award recognises innovation and excellence in sustained ocean observing for scientific and practical applications and the citation on the team's certificate recognises them for transforming our understanding of Atlantic circulation with a breakthrough in observing system design providing continuous, cost-effective measurements.



Read more about the work this award recognises on the National Oceanography Centre website, noc.ac.uk/news/award-win-international-sustained-observations-team.

AGU Fellowship Nominations

The Ocean Sciences Section of AGU, led by its current President, Clare Reimers, is focused on the enhancement of diversity in the nominations to AGU for the award of AGU Fellowships, and also other AGU medals and prizes, within the ocean Sciences field. This is motivated by the lack of diversity in applications received in recent

years, which almost inevitably leads to a lack of diversity in the elected Fellows.

Fellowships and medals in AGU recognise individuals who have made outstanding contributions to scientific advances in their field. We want the nominations submitted to reflect the excellence and diversity of individuals within the whole AGU scientific community. As part of our efforts, we are therefore reaching out to the various major international research programmes and groups representing marine scientists, and asking you to encourage nominations from your community, and particularly from some of the very best scientists who may not, for many reasons, have been nominated in the past.

The Fellowship nomination process is now open until March 15th 2021 and if you need any help please do get in touch, and someone on the Canvassing Committee will do what they can to help. The relevant web links are www.agu.org/Honor-and-Recognize/Honors/Union-Fellows and www.agu.org/Honor-and-Recognize/Honors/Union-Awards.

Canvassing Committee Members

Frederick Bingham, University of North Carolina, USA

We Jun Ca, University of Delaware, USA

Tim Jickells, University of East Anglia UK

Ruo Quian Wang, Rutgers University USA

Can you help rescue historic tide gauge data from around the UK to help study climate change and sea level rise?

A new citizen science project needs the public to help recover data from historic tide gauge ledgers from the North West of England and convert it into usable data by scientists.

The NOC's Permanent Service for Mean Sea Level (PSMSL) dataset is used globally to study climate change and sea level rise by many organisations including the Intergovernmental Panel on Climate Change (IPCC). "Around 3 million people live near the coast in the UK, and with global sea level rising, we need long records to be able to investigate how local tides and sea level are changing. One way this can be done is by recovering data from old documents. In this project, we are trying to convert data from old tide gauge ledgers from two locations in the North West of England into data usable by scientists."

Explained PSMSL's Marine Data Manager, Elizabeth Bradshaw.

The first ledgers, comprising of around 16000 pages, focus on two locations: George's Pier in Liverpool, now the site of the Cunard Building, and Hilbre Island, a tidal island on the Wirral peninsula. The ledgers were written in the 19th Century using values read from charts. These charts were produced by tide gauges, which automatically recorded the state of the tide. There are over 200 ledgers in the archives at the National Oceanography Centre.

Volunteers can participate in the project through the Zooniverse website, www.zooniverse.org/projects/psmsl/uk-tides, and undertake as much or as little as they like. The task is simple, view images of the hand-written ledgers and add the figures you see into the corresponding columns on the online form.

MASTS is pleased to announce the re-launching of its webinar series for 2021

Last spring and summer, The Marine Alliance for Science and Technology Scotland (MASTS) ran a series of weekly and publicly available webinars that were all very well received. Audiences joined from both within and outside the UK to listen to different speakers each week, and many would catch-up on our YouTube Channel, www.youtube.com/channel/UCYyYvBMsAM2MEjshrMOsMtg.

MASTS will continue promoting open and accessible marine science discourse and we are pleased to provide this with our next round of speakers. Starting this month, every Wednesday at 13:00 GMT we will have a live webinar and Q&A session with the presenter, check out who's featuring and Sign up here, us02web.zoom.us/webinar/register/WN_AanUv_9ATB6FuXFOer1OSw.

The NOCA 2021 Annual General Meeting

The 2021 AGM of the NOC Association of Marine Science National Capability Beneficiaries, www.noc.ac.uk/partnerships/our-national-role/coordinating-uk-marine-science/noc-association, will be conducted by Zoom on 11th and 12th May 2021. This year's meeting will cover a wide range of topics including the NERC fleet, the Net Zero Oceanographic Capability Scoping Project (NZOC), development work in AUVs, the COVID-19 legacy, Equality, Diversity and Inclusion, the UN Decade of Ocean Science for Sustainable Development, the UN Climate Change Conference COP26, the UK G7 Presidency, global oceanography programmes, international engagement, the next generation of marine scientists and the funding landscape for marine science.



Fishing boat courtesy of Howard Marson

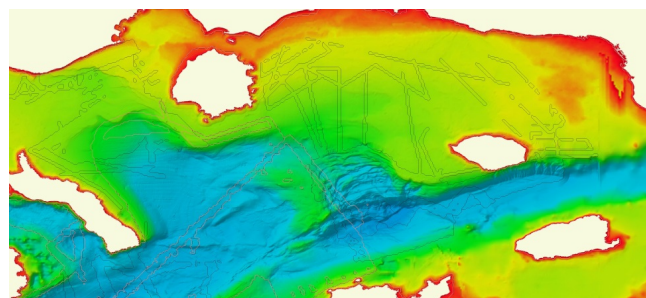
You are warmly invited to participate in this free on-line event, visit noc-events.co.uk/noc-association-meeting-2021 for further details and to register. Please contact Jackie Pearson, Secretary to the NOCA, jfpea@noc.ac.uk, for any additional information.

Release of an upgraded version of the highly popular EMODnet Bathymetry Digital Terrain Model

EMODnet Bathymetry, an initiative of the European Commission, is pleased to announce, on behalf of the full consortium with all associated collaborators, the release of the latest version of the *EMODnet Bathymetry Digital Terrain Model (DTM)*. With over 33,000 individual tiles

downloaded in 2020, this bathymetric product is already widely used in a whole range of applications, from marine science to sustainable ocean governance and blue economy activities.

This new EMODnet Bathymetry product benefited from significant developments and expert inputs in 2020, including new data gathering, reprocessed data, thorough selection of the best data source and use of innovative bathymetric sensors (such as Satellite Derived Bathymetry). It allows users to visualise bathymetric features with greater detail, in addition to providing a powerful 3D visualisation functionality covering all European seas, into the Arctic and Barents Sea, and greater accuracy along European coastlines, thanks to the integration of both in water and satellite datasets. It is available free of charge for viewing and downloading, and sharing by OGC web services from, www.emodnet-bathymetry.eu/data-products.



EMODnet DTM 2020 along the coasts of Greece (with new survey tracks highlighted)

This improved DTM provides users with even greater resolution and coverage of bathymetry across European seas and beyond. These updates contribute to further reducing uncertainty, and are used in real-life settings such as improving society's ability to forecast storm surges, lowering the risks of damage to coastal and offshore installations and increasing public safety. EMODnet Bathymetry is now the 'go-to' place for oceanographers in providing a base geometry for hydrodynamic models, for marine geologists studying morphological processes, and for biologists and conservation managers who require trusted and high-quality seabed habitat maps, which rely on accurate and high-resolution bathymetry, amongst other parameters.

EMODnet Bathymetry also supports a wide range of marine and maritime activities, including the Blue Economy, from the marine dredging sector to the planning of pipeline trajectories, locations

of offshore wind farms and planning of harbour extensions. "We are releasing the EMODnet Bathymetry 2020 DTM product, at the dawn of the United Nations Decade of Ocean Science for sustainable development, as a clear proof of the European contribution to the world seabed mapping effort. With this upgraded version of the EMODnet Bathymetry DTM, we allow users to have easy and free access to high quality bathymetric data which can drastically improve their work.", declared Thierry Schmitt from SHOM (Service hydrographique et océanographique de la marine), the French Naval Hydrographic and Oceanographic Service, Coordinator of EMODnet Bathymetry.

EU-China partnership sets the pace for international marine data sharing

EU-China collaborations on marine data and knowledge sharing took a new step forward with the signing of a Memorandum of Understanding (MoU) between the European Marine Observation and Data Network (EMODnet) and the National Marine Data and Information Service (NMDIS) of China.



The agreement consolidates the operational, technical and scientific collaboration which is already well underway, by providing a clear framework to advance the joint efforts through the EMOD-PACE and CEMDNET projects on three specific areas of collaboration: (i) the sharing of available in-situ, earth observation and modelling marine data, (ii) the exchange of knowledge and best practices related to marine data and information product R&D and associated technology, and (iii) the development and implementation of common work plans between NMDIS and EMODnet in relation to ocean reanalysis, seabed habitat mapping, ecological vulnerability and coastal zone adaptation. A

download of the full press release is available here, emodnet.us13.list-manage.com/track/click?u=98d743e3acbf4e3b58a1934cb&id=4637988252&e=6bd419b4e4.

The Ocean in a Changing Climate

The UK Marine Science Co-ordination Committee (MSCC) has highlighted the importance of the ocean and climate change through the issue of a joint public statement. This statement, endorsed by all MSCC members, reveals the impacts of marine climate change, including the risks from projected accelerated sea level rise, changes to ocean chemistry, marine ecosystem degradation and inevitable implications for individual and societal health and wellbeing. The public statement can be downloaded by visiting the MSCC website, www.gov.uk/government/groups/marine-science-co-ordination-committee.

VIEWS

Complete Sonardyne suite for Dive Technologies' large displacement AUV

Quincy, Massachusetts, based underwater robotics innovator Dive Technologies has chosen a complete suite of Sonardyne technologies for navigation, tracking and control of its large displacement DIVE-LD autonomous underwater vehicle (AUV) programme.

The DIVE-LD AUV is being developed to meet a wide range of long-endurance mission requirements, across the commercial, research and defence sectors. To support long-distance and long-duration navigation, while minimising complexity and payload space consumption, the vehicle is fitted with Sonardyne's industry leading hybrid navigator SPRINT-Nav.

For underwater positioning and acoustic communications, the DIVE-LD is fitted with Sonardyne's AvTrak 6, a combined transponder, modem and emergency relocater beacon all in one. To cover all its concepts of operations (CONOPS), including tracking and communication during development and testing, Dive Technologies has also acquired Sonardyne's most capable Ultra-Short BaseLine (USBL) system, Ranger 2, with its latest, compact Gyro USBL.

The DIVE-LD AUV, measuring 48 inches in diameter and 19 feet long and designed for operations down to 6,000 m water depth, is currently in production in the US with sea testing ongoing in New Bedford. Founded in 2018, Dive Technologies' rapid development program has included support from the Defense Advanced Research Projects Agency (DARPA) and technology partnerships with organizations including the Centre for Marine Autonomy and Robotics at Virginia Tech.



Sonardyne's underwater technologies are supporting Dive Technologies' large displacement DIVE-LD autonomous underwater vehicle (AUV) programme.

A key part of the development has been to opt for high-performance, off-the-shelf systems, such as SPRINT-Nav for navigation, allowing the company to focus on building certain customized systems in-house. SPRINT-Nav, which is available across a range of performance levels, all in the same form factor, also supports Dive Technologies' focus on mission adaptability, as does Ranger 2.

Tim Raymond, Dive Technologies' Director of Research and Development, says that Ranger 2 offered a proven platform with a track record across a wide range of use cases, offering flexibility and scalability in functionality and complexity. "With a new development effort underway for Dive Technologies' DIVE-LD autonomous underwater vehicle, we had a wide range of use cases in mind and needed a single system capable of supporting the various mission sets we had in mind," he says. "We also needed a topside system which could scale in functionality and complexity with our vehicle as we continue to add features and capabilities; from our initial testing, where our needs were just tracking and emergency commands, to more advanced

features such as USBL aiding and SMS transmission of vehicle and data health metrics. Ranger 2 is a good fit for both of these needs and it has enabled us to meet our challenging goals of simultaneous development and testing whilst maintaining consistent and impressive performance even in challenging operating conditions. The system has proven reliable, easy to use, and portable to support mobilisation on a variety of support vessels."

"We're excited to see the work that Dive Technologies is rapidly progressing through the DIVE-LD program," says Dan Zatezalo. "The wide range of missions they're targeting as well as their focus on highly-scalable open software and hardware architectures aligns with where we see the industry heading. Our own philosophy has been about integrating and simplifying our systems by utilizing a common platform and software architecture, while also improving performance and offering flexibility and scalability. We look forward to seeing the DIVE-LD performing."

Ranger 2 is Sonardyne's highest performing USBL system, capable of simultaneous long range target tracking, dynamic positioning (DP) and subsea communications. It is being supplied to Dive Technologies with Sonardyne's new compact Gyro USBL, which combines the vessel heading, pitch and roll data that's critical to USBL system precision, with an acoustic transceiver in a single housing, supporting system simplification and ease of mobilization.

SPRINT-Nav combines Sonardyne's SPRINT INS sensor, Syrinx 600 kHz DVL and a high accuracy intelligent pressure sensor into a single housing, making it one of the smallest combined inertial navigation instruments on the market. SPRINT-Nav's tight integration of raw sensor data at a low level provides unprecedented navigational performance and precision for subsea vehicles, consistently outperforming competing systems in customer trials.

Built for simple integration on medium to large AUV platforms, AvTrak 6 combines the functions of transponder, transceiver and telemetry link in one low power unit, leaving more payload space and power for other instruments. It enables AUVs to undertake simultaneous LBL ranging, USBL tracking via a surface vessel and robust telemetry

for AUV to vessel and AUV-to-AUV communications.

Fugro selects Sonardyne for its uncrewed vessel operations

Leading geo-data specialist Fugro has chosen underwater positioning and communications technology from Sonardyne to support its global fleet of uncrewed surface vessels (USVs) and remotely operated vehicles (ROVs). Fugro will integrate Sonardyne's Mini-Ranger 2 Ultra-Short BaseLine (USBL) positioning system, configured with the company's Marine Robotics software extension pack, into its new 12 m-long Blue Essence USV, of which the first vessel will be delivered to Fugro's base in Perth in February.

Mini-Ranger 2 with the enabled Marine Robotics pack will allow the Blue Essence to be used to deploy, track, command and control the Blue Volta electric remotely operated vehicles (eROVs) and autonomous underwater vehicles (AUVs) as part of inspection, survey and data harvesting projects, all controlled from Fugro's onshore remote operations centres. Construction of further vessels that will bolster Fugro's global footprint are under way at SEA-KIT's bespoke facility in Tollesbury, UK, where integration of the Mini-Ranger 2, complete with hull-mounted acoustic transceiver will take place.

Mini-Ranger 2 is ideal for use from small vessels, including USVs, where survey-grade positioning performance is required. It can simultaneously track 10 targets at very fast update rates, is quick to install and has a standard operating range of 995 m, extendable to 4000 m. Sonardyne's Marine Robotics software pack unlocks valuable additional capability when used with a compatible subsea vehicle mounted instrument such as AvTrak 6. This includes secure data exchange and remote control of multiple AUVs deployed in swarm scenarios.

Ivar de Josselin de Jong, Global Solution Director for Remote Inspection at Fugro, says: "The integration of Sonardyne's positioning system into our unique remote inspection offering, which combines the Blue Essence USV with the Blue Volta inspection eROV, is key in supporting Fugro's strategy to lead the development of remote and autonomous solutions for a safer, more sustainable and more efficient approach to the construction and maintenance of marine assets. Our fleet will deliver an entirely remote-

controlled inspection solution for the first time in history and this will play a pivotal role in the rapidly growing offshore wind sector."



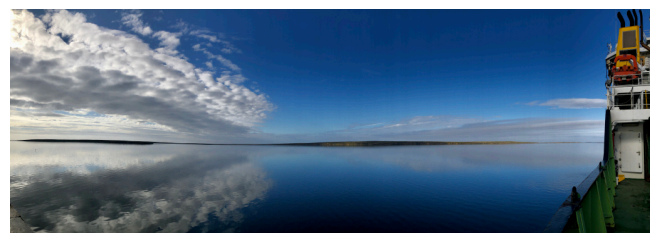
Fugro's Blue Essence uncrewed surface vessel. Image from Fugro.

Graeme Buchanan, Sales Manager with Sonardyne in Singapore, says: "We're pleased to be continuing to support the ongoing transition towards increasingly remote and uncrewed operations across all marine sectors. Enabling entirely remote-controlled inspection, with solutions such as our Mini Ranger 2, is delivering safer, more sustainable and efficient operations across the ocean space."

SALTS

BAS team joins the RRS James Cook

The ship's crew and National Oceanography Centre (NOC) researchers on board *RRS James Cook* were joined by scientists from the British Antarctic Survey (BAS) for an expedition to the massive A68a iceberg in the South Atlantic. The ship departed the Falkland Islands on the 2nd of February for the giant iceberg, where the BAS and NOC teams will investigate A68a in an effort to improve our understanding of its potential impact on wildlife and ecosystems around South Georgia.



Oceanographers, Dr Yvonne Firing from the NOC and Dr Povl Abrahamsen from BAS, describe their experiences in their latest blog post which

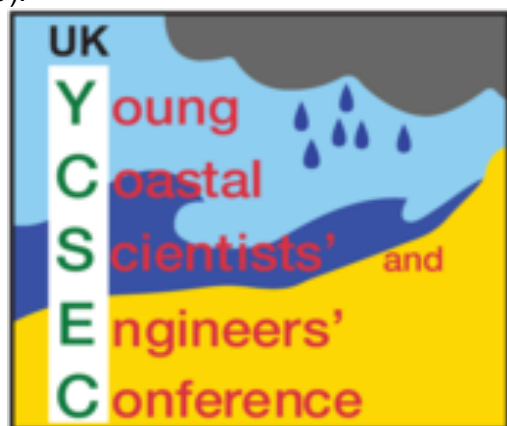
you can read here, www.bas.ac.uk/blogpost/blog-mission-to-investigate-a68a-iceberg/.

CALENDAR

29th-30th March 2021: Young Coastal Scientists and Engineers Conference

Liverpool, UK

Registration is open for Young Coastal Scientists and Engineers Conference (YCSEC) hosted virtually by the National Oceanography Centre (NOC).



The event is free to attend and there will be prizes for the best presentations sponsored by our friends at Marlan Maritime Technologies, marlan-tech.co.uk. If you'd like to present your work or simply attend please register by 12th February. Abstract submissions for those wishing to present either a 15 minute talk or five minute single slide 'Hotplot' will also close on the same day. Get all the details and register here, noc-events.co.uk/young-coastal-scientists-and-engineers-conference-ycsec-2021.

7th-10th May 2021: Arctic Circle Japan Forum

Tokyo, Japan

The Third Arctic Science Ministerial Meeting is co-hosted by the Icelandic Ministry of Education, Science and Culture, and the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT). Arctic Circle is collaborating with the Sasakawa Peace Foundation, www.spf.org/en/. Governments, universities, companies, research institutions, organizations, associations and other partners are invited to submit proposals for Sessions to the Arctic Circle Secretariat at: www.arcticcircle.org/forums/japan/proposals.

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14th-18th June 2021: EMODnet Open Conference and Jamboree

Ostend, Belgium

Due to the outbreak of the COVID-19 virus, the second EMODnet Open Conference and Jamboree which was initially scheduled to take place in September 2020 has been postponed. Save the date for this event, which will bring together the extended EMODnet family in Ostend (Belgium) to set goals for the next phase of EMODnet to 2030. More information will follow, www.emodnet.eu/conference2021.

14th-18th June 2021: the postponed EcoSummit 2020

Gold Coast, Australia

As a result of the spread of COVID-19, Elsevier and the EcoSummit 2020 Chairs took the decision to postpone the 6th International EcoSummit Congress to 2021, to be held in the same venue at The Gold Coast Convention Centre, Australia.

Registration is open for the new dates, ecosummitcongress.com/conference-register.asp, and we look forward to seeing you at EcoSummit 2021. So that you can register with confidence we are relaxing our cancellation terms due to the Coronavirus COVID-19 situation. Rest assured that we will refund your registration fee, with no penalty, should you wish to cancel during the uncertainty of the outbreak.

EcoSummit 2021 Co-Chairs:

Jan-Olaf Meynecke, Griffith University, Australia

Robert Costanza, Crawford School of Public Policy at Australian National University, Australia

B. Larry Li, University of California, Riverside, USA

16th - 18th June 2021: 9th International Workshop on Marine Technology - MARTECH 2020

Vigo, Spain



The organising Campus de Excelencia Campus do Mar (University of Vigo, Spain) and the Universitat Politècnica de Catalunya (UPC, Spain) will call for papers for MARTECH 2021, www.martech-workshop.org.

The main objective of the MARTECH Workshop is to show latest investigations and exchange of information and points of view on current research in MARine TECHnology. The Program Committee cordially invites you to participate and submit your contribution in one of the proposed topics:

- Operational Oceanography
- Instrumentation, Metrology, Signal processing
- Seafloor observatories and sensor networks
- Observatories, remote sensing
- Marine Robotics: ROVs, AUVs, ASVs, Gliders
- Underwater imaging and communication
- Seafloor and Water Column characterization
- Technology for Marine Biology and Aquaculture
- Renewable energies
- Coastal, regional, and offshore research vessels and platforms
- Marine Geophysics technology and solutions
- Marine Data Interoperability and data flow
- Technologies for a sustainable dredging
- 2021 as a point between the past and the future

Yours sincerely, Dr. Ana Bernabeu, General Chair and Dr. Joaquin del Rio, Steering Committee Chair

29th - 30th June 2021: The 8th PRIMaRE marine renewable energy conference
Menai Bridge, Wales

The conference represents the latest in the annual scientific conference series of the marine renewable energy community. The conference will be held **online**, and run by Bangor University, School of Ocean Sciences, www.bangor.ac.uk/oceansciences/primare.php.en.

The conference includes universities, industry and research centres active in all aspects of marine renewable energy with presentations ranging from industrial developers, university researchers, marine environmentalists and policy makers. The aim of the event is to cover a wide range of topics in marine renewable energy, including: technology, policy, environment, hydrodynamics, resource characterisation, materials, operation and management, etc.

The 8th PRIMaRE conference will provide a platform for both industrial and university speakers to present their up to date activities and on-going research programmes through posters.

Conference Themes within Marine Renewable

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Energy:

- Materials
- Fluid Dynamics and Hydrodynamics
- Survivability and Reliability
- Environmental Impacts
- Power Conversion and Control
- Infrastructure and Grid Connection
- Marine Operations and Safety
- Marine Planning and Governance

We hope to build on the hugely successful online conference of last year, with over 210 delegates from all over the world. There is no conference fee; however please register to ensure a place by 29th May 2021. Please also consider submitting an abstract of less than 500 words by the 30th April 2021. Instructions for submitting the abstract and conference registration details can be found on the PRIMaRE website, <https://primare.events/>.

Abstracts will be accepted as oral or poster presentations. The abstract should summarise the context of the presentation or poster, and include aims and objectives, a description of the methodology and summary of the findings. You can also sign up to the PRIMaRE network here: www.primare.org/?q=content/primare-network.

9th – 13th August 2021: IMBeR ClimEco7 summer school
Vancouver, Canada

ClimEco7 Vancouver Canada
9-13 August 2021

Interdisciplinary ocean science for sustainable development

IMBeR ClimEco7 summer school postponed to 2021

Unfortunately, due to the restrictions that we are currently all dealing with, and the uncertainty as to how things will be in August when we were planning to hold ClimEco7, IMBeR has taken the decision to postpone the summer school for a year.

All the applications that we received for ClimEco7 this year will be carried over to 2021. Results of the selection process will be made known during March 2021.

New dates for ClimEco7 are 9-13 August 2021
UBC, Vancouver, Canada

6th - 10th September 2021: Postponed Challenger Society Biennial Meeting Oban, Scotland

The biennial Challenger conference attracts around 300 leading UK marine scientists, science managers and early career scientists. As well as showcasing cutting edge marine science and technology, the conference is noted for its training of young scientists and networking events, including a public lecture by an eminent authority on relevant societal marine issues.



Once again the call is out for sponsors and exhibitors wishing to participate in next year's conference. The conference is a great place to be if you are recruiting marine science graduates.



For the only the third time, the conference will be held at SAMS (Scottish Association for Marine Science) in beautiful OBAN. SAMS hosted the first post war conference back in 1946 and since then only once more since in 2006.

6th - 10th September 2021: Estuaries and coastal seas in the Anthropocene



The ECSA 58 - EMECS 13: Estuaries and coastal seas in the Anthropocene will take place at the University of Hull, UK. The submission deadline for oral and poster abstracts is 9 April 2021 and we look forward to receiving submissions from new authors.

One of the Co-Convenors, Professor Victor de Jonge, recently passed away suddenly and unexpectedly. As such, the symposium will be held as a tribute to Victor and we are encouraging sessions and presentations which reflect Victor's

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enormous contribution to estuarine and marine science and management.

We invite contributions within a broad range of topics, covering the diversity of threats and opportunities facing estuarine, coastal and marine ecosystems and the people they support. For our full list of topics and special sessions please visit the website.

We look forward to welcoming you and our keynote speakers to Hull in September 2021.

Conference Chairs:

Mike Elliott, University of Hull, and International Estuarine & Coastal Specialists Ltd

Tim Jennerjahn, Leibniz Centre for Tropical Marine Research, Bremen, Germany

Masataka Watanabe, Chuo University, Japan

20th - 22nd September 2021: Oceanology International Middle East

Abu Dhabi, UAE

Whilst it is hugely disappointing to postpone the launch, and not a decision we have taken lightly, we believe it is the best course of action for all involved. In the last couple of months, we have been speaking to customers, partners and supporters to understand their views and to ensure we make the best decision - in such challenging circumstances - for the ocean communities we serve.

We trust that postponing Oceanology International Middle East will enable us to deliver the true value of this world-leading brand next year. Amid these challenging times, we would like to reiterate our commitment in creating new opportunities and connections for our industry. Over the next several months, we will offer our support to the global community by hosting various digital activities that will connect our exhibitors with their targeted clients. In advance, we thank you for your understanding and support. If you require any further clarification or information regarding this situation, please feel free to email us at info@oceanologyinternationalmiddleeast.com.

5th - 9th September 2022: Challenger Society Biennial Meeting – celebrating the 150th anniversary of the Challenger Expedition

London, UK

To be hosted by the National History Museum, just a 'date for the diary', stayed tuned.

The CSMS email address is info@challenger-society.org.uk. Contributions for next month's edition of Challenger Wave should be sent to: john@vectisenvironmental.com by the 26th February.

We continue to send printed copies of Challenger Wave to members of the CSMS without email addresses. However it is in everybody's interest to send your email address to Jennifer Jones, jxj@noc.ac.uk, as soon as possible

JOBS

Modelling Vacancy at Cefas

Job Title: Numerical Hydrodynamic Modeller

Deadline: 7th March 2021

The Centre for Environment, Fisheries and Aquaculture Science is the UK's leading and most diverse centre for applied marine and freshwater science. We currently rank in the top 5% of over 2,500 international institutes publishing in the same fields. We advise government and private sector customers in the UK and abroad on the environmental impact of their policies, programmes and activities through our scientific evidence and impartial expert advice.

The successful applicant for this post will be involved in a range of modelling activities relevant to ocean and coastal processes, delivering quantitative applied marine science for a range of UK and international customers. You will work closely with a multi-disciplinary team, including oceanographers, biogeochemists, marine ecologists, and fisheries scientists, so strong communication and inter-personal skills are essential.

This role provides an exciting opportunity to learn and develop within a team of experienced hydrodynamic and ecosystem modellers. We are seeking an enthusiastic and adaptable individual, with a good knowledge of numerical modelling, including programming languages and data analysis methods. You will also have a desire to expand your knowledge of modelling techniques and broader marine science applications.

Additional information, including how to apply, can be found here:

<https://www.civilservicejobs.service.gov.uk/csr/jobs.cgi?jcode=1706098>

Informal enquiries can be made to Jennifer Graham (jennifer.graham@cefas.co.uk).

There are jobs on the IMBER web site

<http://www.imber.info>



Integrated Marine Biosphere Research

Jobs and opportunities

New

- Inaugural OGEN Cohort, offered through Dalhousie, Memorial University of Newfoundland, University of Prince Edward Island or University of New Brunswick. 23 PhD opportunities in ocean sciences, engineering and social sciences, Atlantic Canada. **Apply now**
- Hybrid training course: Regional Ocean Governance for Med, Black, Baltic and Caspian Seas, International Ocean Institute, Malta. No deadline given, **apply now**
- Research Scientist 3: Marine carbon, University of Washington, Seattle, WA, USA. No deadline given, **apply now**
- Executive Director, Center for Marine Science, University of North Carolina, Wilmington, NC, USA. Apply by **14 February**
- Fisheries Standard Manager: Marine Stewardship Council, London or other European MSC office. Apply by **15 February**
- Post-graduate training: Leadership in Environmental and Digital Innovation for Sustainability, students/Postdocs from McGill, Concordia, QUAM or University of Montreal, Canada. Apply by **15 February**
- Postdoc: Ocean food systems, AWI, Bremerhaven, Germany. Apply by **17 February**
- 2022 Knauss Marine Policy Fellowship: PhD or Postdocs affiliated with US higher education institutions Apply by **19 February**
- Postdoc: Biogeochemical Earth system modelling: Ocean-based negative emissions. AWI, Bremerhaven, Germany. Apply by **28 February**
- Erasmus Mundus International Master of Science: Health Management in Aquaculture. Apply by **1 March**
- Postdoc: Investigating iron-binding organic ligands in open ocean systems, University of South Florida, St. Petersburg, FL, USA. Apply by **1 March**
- 6 PhDs: Integrated coastal ecosystems and climate change, University of Helsinki, Finland. Apply by **30 March**

In case you missed it...

- Assistant Prof. Chemical Oceanography: University of Rhode Island, Narragansett, RI, USA. Open until filled. **Apply soon**
- Postdoc: Effects of climate change on Arctic benthic coastal communities, LOV-Sorbonne, France. Apply by **15 February**
- Postdoc: Marine metabarcoding and environmental monitoring, Norce, Bergen, Norway. Apply by **28 February**
- Three Track-tenure Assistant Prof positions: Earth sciences, Utrecht University, The Netherlands. Apply by **15 March**
- 4 Postdocs: Marine science and technology, ISblue, Brest, France. Apply by **30 April**
- Part-time ocean sciences lecturers: University of California, Santa Cruz, CA, USA. Apply by **9 July**

Visit the IMBeR Website

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